

all 923(238)

L65

GEOLOGICAL SURVEY OF KENTUCKY.

JOHN R. PROCTER, DIRECTOR.

REPORT

ON

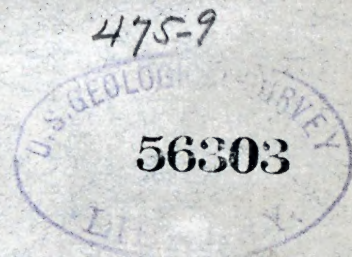
THE BOTANY

OF

MADISON, LINCOLN, GARRARD, WASHINGTON,
AND MARION COUNTIES,
KENTUCKY.

By W. M. LINNEY.

STEREOTYPED FOR THE SURVEY BY MAJOR, JOHNSTON & BARRETT, YEOMAN PRESS, FRANKFORT, KY.



GEOLOGICAL SURVEY OF KENTUCKY.

JOHN R. PROCTER, DIRECTOR.

REPORT

ON

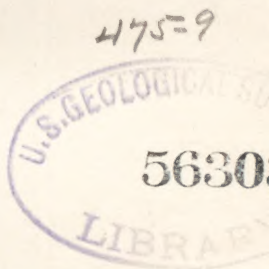
THE BOTANY

OF

MADISON, LINCOLN, GARRARD, WASHINGTON,
AND MARION COUNTIES,
KENTUCKY.

BY W. M. LINNEY.

STEREOTYPED FOR THE SURVEY BY MAJOR, JOHNSTON & BARRETT, YEOMAN PRESS, FRANKFORT, KY.



1882

INTRODUCTORY LETTER.

HARRODSBURG, KY., December, 1882.

HON. JOHN R. PROCTER,

Director of the Kentucky Geological Survey.

DEAR SIR: Inclosed you will find a catalogue of the plants met with in the counties of Madison, Garrard, Lincoln, Washington, and Marion. With the list are some notes of general and specific characters. If at times I have written feelingly, it is because no man who loves and studies plant life can gaze on its wanton destruction without emotion.

Could I have written as I have sometimes felt, it would have been a stronger plea to every heart to stop the wasteful destruction of our native plants. Illustrating from them, such a plea should have the *grandeur of an oak*, the *solidity of a beech*, the *strength of a hickory*, and withal, the *finish of walnut*. It should also combine the *beauty of the rose*, the *modesty of the violet*, the *gracefulness of the fern*, the *purity of the lily*, and the *fragrance of the mint*.

Respectfully,

W. M. LINNEY.

REPORT ON THE BOTANY OF MADISON, LINCOLN, GARRARD, WASHINGTON, AND MARION COUNTIES.

INTRODUCTION.

No one subject connected with our material prosperity deserves more attention and a closer investigation than that of the vegetative life which covers the earth. Considered only in the light of natural productions, plants and plant life are sources of varied knowledge to the student, and afford many pleasures to the mind. There can be no higher mental enjoyment than the satisfaction of feeling that, in passing through life, we have gathered to ourselves some lessons taught by the trees of the forests, the grains of the fields, or the smaller plants which surround us everywhere. There is no subject by which the mind can be better disciplined for thought, there is no field from which so many illustrations can be drawn, and there is no branch of science by which the mind can be more broadened and liberalized, and the observing powers strengthened than that of botany. There is so much to be learned from the habits and growth and distribution of plants, that no man should be content unless he has acquainted himself to some extent with some of the peculiarities and resources of vegetable life.

Besides the enjoyments derived from an investigation of the beauties and singular habits of plants, they are studied in their adaptation to the more personal and general relations they bear to the economy of our daily lives. To an almost unlimited extent, they enter into the health and comfort and pleasure of our every hour. It is to plant life that we look for protection and shelter through the inclemencies of seasons. It is from plant life that we derive the larger part of the food which feeds us in hunger and the clothing which

enwraps from nakedness and cold; and it is to plant life, when the diseases incident to life overtake us, that we turn for remedies which shall restore us to health.

Beyond the study of vegetation as an intellectual pleasure or as elements of personal welfare, there is another and more universal phase—the preservation of the race of mankind. Of all the forces of nature, no one plays a more important part than does the plant life of the world. The formation and stability of climates, the distribution and preservation of moistures, the control and destruction of poisonous gases, and the preparation and protection of soils, are only some of the offices which plant life perform in the economy of nature. As man has the power to destroy all plants, he is fitted to make the surface of the earth, by his intelligent care, a smiling garden—or by his ignorant destruction, a terrible desert. From an ignorance of those laws fair countries have been destroyed and depopulated, and the same destructive influences are still at work.

With the above facts before it, the State Legislature required that during the investigation of the Geological Survey, the trees and smaller plants should receive some attention from its members. Every note written on a subject adds some new value to it; one man does but little towards the investigation of any one subject. Each man is apt to examine one class of phenomena and pass the others by. In the brief notes appended, a few facts gathered here and there are presented. The list of flowering plants and ferns is far from being complete. The whole flora of a region can only be made out by the work of local botanists. It requires the constant work of years. Yet the notes and catalogue are of some value, for they add a mite to the work done, and to that which is to be completed in the future.

ORIGIN AND INTRODUCTION OF TIMBERS.

It is impossible to determine from whence the original timbers of this region were derived, and how much they have been changed from their original characters. But it is proba-

ble that soon after the beginning of the uplift of the CUMBERLAND FOLD and the KENTUCKY ANTICLINAL, some of the species may have sprung up on the accumulating islands; and it seems possible, from the peculiar distribution of the pines in Eastern and Central Kentucky, that the cone-bearing trees may have been amongst the first introduced. The peculiar habitat of the yellow-wood, found only at two or three stations in the State, and those on the disturbances mentioned above, would seem to place it among the original trees. Some species must have been distributed very slowly until the introduction of animals and man. Both of those agencies must have had much to do with the distribution of certain trees which bear edible fruits.

There are certain evidences that appeal to the senses—and we seem to have but little occasion to describe them—which make it appear that the distribution of some plants, like the hickory, walnut, oak, black haw, persimmon, etc., was to some extent the work of the ancient “Mound-Builders.” We do not know that any attention has been given to this theory, but it is worthy of some attention. Outside of the influences of wind and water in the dissemination of plants and the accidental dropping of seed by man, the various species of rodents appear as the great propagators of some species. We think probably, from our own observations, that more than ninety per cent. of the young hickory and walnut trees that come up in the forests, now, have been planted by squirrels. Those animals will bury great numbers in a single season to prevent their destruction by freezing and other causes, and that their shells may be softened. As they are placed at the right depth to germinate well, and are selected for their soundness, it is evident that if the animals are killed or driven away, that all these nuts come up; without such agency, only an accident would so cover them under the surface that they could germinate. Nuts are often carried long distances from where they grew, and dropped in places favorable for germination. The little striped ground-squirrel has something to do with the planting of acorns, etc., and perhaps the wood-mice are not unimportant seed-sowers.

ORIGINAL CONDITION OF TIMBERS.

When Boone and his companions first entered Kentucky, this part of the State was an extensive forest, only broken by the channels of the streams, and the few *lick-regions*, which had been denuded by the tramping of buffaloes and deer, while in quest of saline matters contained in the earth. From the fringes of sycamores, maples, and elms which skirted the banks of the Kentucky and Salt rivers, to the pines and mountain chestnut oaks on top of Big Hill, there was one wide sweep of magnificent trees, including many species. In this forest were long reaches where grew but little undergrowth; and then there were places where shrubs clustered in clumps; and then again, there were large cane-brakes almost impenetrable. Grape vines of massive thickness climbed the tallest trees, and flowers smiled from every nook.

Altitudes had little, here, to do with the distribution of the trees; only two natural conditions seem to have modified their disposition: one of minor importance—the quantity of moisture; and the other of much consequence—the character of the soil. The last was such an important factor, that had the earlier emigrants to Kentucky been possessed of greater knowledge, the best regions would have been first selected for occupancy. But, instead of this, many parties passed over the richest soils and settled on the very poorest.

Very few trees habitually grow along the banks of streams and other wet places, that are confined to this isolated condition; they may, in their natural state, be in unbroken forests; but as lands are cleared up and soils become drier, they adapt themselves largely to the changed conditions. For instance, sycamores and white elms seem naturally adapted to wet places. Yet now, young trees of both species may be seen coming up and growing in very dry situations. As much may be said in reference to the water maple and the water beech. They are species, however, which are here confined to damp situations. The green ash we have never seen except where its roots could reach running water; the box-elder grows only

in very moist situations; the yellow-wood grows for some distance only on the moist talus from the cliffs of Dix and Kentucky rivers. We have not in the region seen a single birch; and its absence seems remarkable. The willows are, of course, moisture-loving trees; but it seems impossible to determine now whether they were indigenous.

When we come to study the distribution of species over the different geological formations of the region, we have a subject which is worthy of a more careful investigation than it has received. It is a subject which should be studied separately and with ample time. When all the observing powers can be thus given to one subject, the mind is not distracted and every minute fact is noted.

In the Reports made on the Geology of the various counties represented in this region, the rocks were divided into the following groups: beginning with the upper and ending with the lower:

Carboniferous, -	{	Coal Measures.
		Upper Subcarboniferous.
		Lower Subcarboniferous.
Devonian, - - -	{	Black Slate.
		Corniferous Limestones.
Upper Silurian, - -	{	Crab Orchard Shales.
		Medina Sandstone.
Lower Silurian, -	{	Upper Hudson River Beds.
		Middle Hudson River Beds.
		Lower Hudson River Beds.
		Trenton Limestones.
		Birdseye Limestones.
	{	Chazy Limestones.

Chazy Limestones.—This series of rocks is only seen in the steep escarpments which rise above Kentucky river, Dix river, and some of the smaller streams that enter them, and the conditions would not seem favorable for preserving any marked characteristics in the distribution of plants. But even here some peculiarity is observed. On no other soils have we been able to see any individual of the following species: yellow-wood, wafer-ash, round-leaved catchfly,

prickly wild gooseberry, white enslenia, corky white elm, or the wall-rue spleenwort. The latter we have observed many times, and always as occupying a station on a single heavy layer of limestone, following its dip up or down the river, but never growing on other ledges.

Birdseye Limestones.—This group, like the last, is seen only near the streams mentioned, making some few soils, but covered sparsely with trees other than the red cedar. This tree still grows in immense numbers and of the finest quality, single specimens having been seen twenty-eight to thirty inches in diameter. The peculiar home of the cedar seems to be on the limestone soils, and the purity of the Birdseye series seems to bring it to its greatest perfection.

Trenton Limestones.—The Trenton Limestones, in their different classes of soil-making rocks, had distributed over them different associations of plants. Over the deep silicious clay soils peculiar to the base of these rocks white oak, yellow poplar, and beech were the principal species, giving out in a large measure, however, when these aluminous soils gave place to either the Birdseye group below or the Blue Grass beds above. Measured by their general distribution here, none of the above-mentioned trees are well adapted to calcareous soils, but, on the other hand, require clay soils, which contain a proportion of silicious elements. The old people of the country tell of the remarkable belts of white oak, beech and poplar, which originally grew over some parts of these counties now denuded of forests. These areas can yet be outlined by the character of the small woodlands not yet destroyed and by the extension of the soils on which they grew.

Over the Blue Grass beds, the forests were particularly marked with blue-ash, white elm, white chestnut-oak, maple, wild cherry, basswood, coffee-tree, large-fruited shell-bark hickory, hackberry, and mulberry. A variety of other trees grew with them, but not often in great numbers. The blue-ash and wild cherry sometimes made up fifty per cent. of the trees. These

soils, lying in comparative levels, were rich, black, calcareous loams. In noting such trees on other groups, they seemed to require near the same conditions of soil which existed here.

The Upper Birdseye beds, with a return of very pure limestones, were marked, like the lower rocks of the same name, with cedars, which either rooted themselves in the crevices of the rocks and grew somewhat stunted, or, where the soil was deeper, they flourished as large trees. In each of the horizons marked by this species, and so far mentioned, there are layers of chert in the limestones; how much this has affected the growth and character of the wood, it is impossible to say.

Lower Hudson River Beds.—The heavy clays at the base of these beds are marked usually with post-oak and laurel oak; and it is a very unusual thing to see a single tree of either of these species at any other horizon over the whole Silurian (Lower) formation. Why those two species should adapt themselves exclusively to the soils derived from forty or fifty feet of clay shales that do not seem to show any different character from several other horizons, it would be interesting to know. Altitude certainly had not influenced them; for all the other beds may be seen at the same actual elevation. Moisture could not have influenced their station; for these soils are not wetter or drier than others. There must be some peculiarity in the chemical constituency of these limestones and shales to have so influenced them. The whole group was covered with white oak, sometimes to the almost entire exclusion of every other species; and from all the evidences now to be seen, and from the information gained from others, this species amounted to at least fifty per cent. of the original forest on the Lower Hudson River beds. The white oak outranks in worth all the other species of timber trees in the State, as it is especially adapted to so many uses, some of which cannot well be supplemented by the others. This belt of trees of large sizes and of the most valuable characters extended through the whole region, and each county had a

reasonable share. There is enough of it in the small patches of trees left here and there to give some idea of its original imposing features. There were usually over this series argillaceous soils with but little loam; but where the rich leaf-mold had been collected in deep hollows and on the protected northern slopes, some other species prevailed over the white oak.

Middle Hudson River Beds.—This division of rocks and soils followed the contour of the last-mentioned group, and was almost universally characterized by the presence of beeches. In places, these trees were equal to at least ninety per cent. of all the individuals in the woods. Usually, however, there were many yellow poplars, and in these soils they attained their largest size and their best quality. No tree in the State had grown to larger proportions than this, the most valued here of all the soft woods. Sometimes where the intercalated limestones of these beds spread out for some distance, sugar maples grew in thick set clumps, and the finest sugar orchards we have ever seen were on these soils. In certain places, also, were to be seen more or less white oak; but taking it all together, it was preëminently a vast beech forest.

Upper Hudson River Beds.—It is but few steps from the Middle on to the Upper Hudson River beds; and with those steps was an almost absolute change in the distribution of the trees. At the base was a return to the conditions existing in the Blue Grass beds—the presence of the rich, black, calcareous soils, and an absence of those deep silicious clays which marked the growth of beech, poplar, and white oak. In their place were long stretches of blue-ash, white oak, wild cherry, scaly-bark hickory, yellow chestnut oak, white walnut, and hackberry. The white oak, beech, and poplar were almost absent over these soils, and the distribution very much like, but still distinct from, that of the Blue Grass beds. But it may be repeated here, that those two soils are the best in the State, and that the distribution of the timbers, mentioned in connection with them, marked the out-

crops of the most valuable lands. Above these nearly pure calcareous soils were some heavy clay beds that gave a return to a region almost exclusively of white oak. This belt was not a wide one, being included in small areas within a narrow range; but its longitudinal extension was as great as that of the others. Mixed timbers were over the remainder of the division, in what proportion and of what species we have not notes to determine.

Medina Sandstone.—The characteristic trees on the Medina Sandstone were oaks, and those with thick tomentous leaves, like post-oak and Spanish oak, largely predominated. In fact, those species seem to have marked the limits of this silicious series. The white oak was in respectable numbers, never growing to a very large size, but producing very good tough wood. Red cedar was quite a plentiful growth on these soils; while large sassafras was in greater numbers than on other groups.

Crab Orchard Shales.—Those shales were usually wet and decomposed to a considerable depth, making quite a contrast to the thin loose soils of the Medina, and produced another change in the distribution of plant life. Here sweet gum was first seen, and with it the following unusual assemblage of trees: white elm, white oak, post-oak, red oak, yellow chestnut oak, burr oak, red maple, shell-bark hickory, black walnut, honey-locust, sycamore, and box-elder. The sweet gum grew to very fair proportions, while the others ranked well in size and quality.

Corniferous Limestones.—While marking a belt through all of the counties of this district, the lateral extension of the soils derived from the Corniferous is very limited. The cherty fragments overlie, and are often mixed with, other soils in tracts of some extent; but as purely derived soils, they are too narrow in range for the past relation of their timbers to be studied. They seem to have been well marked with sugar-maple, as is a common fact where limestones are in ledges on and near the surface and the drainage is good.

Black Slate.—The Black Slate through this region has several phases—one where the shale is level and not well drained, and the other where are well drained slopes. The first had many glady places with small trees of white oak, red oak, black oak, laurel oak, and post-oak. The last was well defined, with a beech forest, in which some white oak, poplar, red oak, and other species grew. Sweet gum, in patches here and there, was a common tree.

Lower Subcarboniferous.—This formation, which constitutes nearly the whole surface of the so-called Knobs, which lie on the south side of this region, is well outlined in all the counties of the district, with the exception of Washington. The soils were not valuable for the better purposes of agriculture; but they possessed a great variety of trees, many valuable species growing to good size and desirable qualities. With the exception of the top of Big Hill, and one or two other high points in Madison county, pines, chestnut, mountain chestnut oak, sour-wood, laurel, and some other species, were exclusively confined to those soils. Fine poplar, white oak, white ash, black gum, white hickory, walnut, maple, and basswood were everywhere. Besides those, many shrubs, vines, and flowers were restricted alone to these soils.

Upper Subcarboniferous.—The limestones of the upper part of the Subcarboniferous group make several classes of soils, but they are restricted in their development here, and do not, as a consequence, give much latitude for an investigation of the peculiarities of the plant life over them. White oak, red oak, scarlet oak, black jack oak, Spanish oak, post-oak, walnut, hickory, ash, and poplar were the principal trees. The black jack oak was nearly confined to this geological horizon; the scarlet oak was rarely seen away from it, but the cedar was distributed over the more exposed beds of heavy limestones.

Coal Measures.—The restricted areas, where remains of the conglomerate sandstones and the carboniferous shales had

been left from erosion, gave little evidence of the distribution common to those soils where they are more extensive. The yellow pine and the cucumber tree were two species which marked the peculiarities of these soils; while poplar, oak, chestnut, and some other species, were distributed with them.

Exceptions.—In Washington county, at a point situated nearly thirty miles from the nearest outcrop of the Lower Subcarboniferous, are several mountain chestnut oaks; they were native to the soil, and presented no differences in character from those seen in their usual habitat. They grew on calcareous clay soils, and it is the only instance where we have met them or heard of them on lower groups than the Subcarboniferous series. In the lower part of Garrard county, situated on the Trenton Limestones, are several cucumber trees growing, but they are rooted in beds which have wasted from the conglomerate sandstone. We have seen several chestnut trees which were indigenous to the localities on the Trenton north of the KENTUCKY ANTICLINAL, but they grew also among the silicious remains of the Coal Measures. In Garrard county is an isolated knob, containing Lower Subcarboniferous shales, and fourteen miles from any remains of the same formation; it has on it, now, quite a number of mountain chestnut oaks. Formerly, the chestnut grew with them, yet neither of those species had spread on to the lower soils around them. The closeness with which some species retain their habitats on particular soils is an evidence that they require exact conditions or almost definite compounds for their food.

DESTRUCTION OF TIMBERS.

There is no truer aphorism than "Man marks the earth with ruin." The boasted axe of civilization (?) has swept like "a besom of destruction" through the grand old forests, and its sound is still heard on the air, ringing the death-knell of every tree whose fall will add a penny to the pocket of avarice.

A careful, intelligent clearing of forests is all right ; but an ignorant destruction of the plant life of any locality is all wrong. One hundred years is not much in the life of some nations ; but a hundred years from the opening up of a country covered with a wealth of plant life, is too short a time for such widespread destruction as marks the timbers of this country.

Had there been a power to control, and an intelligence to direct the clearing of forests for agricultural purposes, and the preservation of young trees in given conditions, this region would have been the fairest under the skies. Hill sides now washed into deep hollows and covered with loose blocks of stone, would have been clothed in valuable trees. Licks which exhibit nothing but utter desolation, would have been robed in green. Creeks whose beds are either raging torrents or dry gulches, would have been hemmed with a garniture of shade "over purling waters' flow." Springs of sweet water would have gushed forth under leafy trees and amidst blooming flowers, where now only muddy seeps are seen. Along the margin of rivers, where wide bottoms extended, a strip of forest would have protected the rich fields, where now the freshet tears away the fruitful lands. Where now stand ragged clumps of injured and dying trees, long lines of valuable timbers would have shed their moisture to the thirsty air. Where great fields of corn are now grown, to be distilled into death, flowers and orchards would have wafted their perfumes on every breeze.

For want of system and intelligence, despoliation has been the rule. Lands, which should have been left as wood nurseries for all time, have had their protecting trees removed, and the soils have been carried away by the action of water. Streams on which old men have gone to mill, or from which they have drawn fish in their youth, "are numbered with the things that were ;" and where springs bubbled and flowers bloomed in sweetness, offensive slop-yards now "smell to heaven."

So far we have only written of the destruction over the parts of those counties, which have been almost denuded of their trees, for farming purposes. When we come to examine the timbers of those regions that are above the Corniferous Limestones, the destruction has not been so large. The valuable trees have mostly been culled out, while the poorer ones have been left, because there was no demand for them. Each day sees the better ones going; and it is only a question of a very few years, when not a tree of value will be left. But, if even the last desirable tree of sufficient age for lumber had been destroyed, the loss would not have been irreparable, had they been removed with care. Over the entire section young trees remain, and in time would be of value, if any care were given them; but it is not done. In the destruction of one single tree, through ignorance and carelessness, often a hundred young ones are either destroyed or forever injured.

Sometimes, persons passing through the woods gash every tree which comes within reach of axe or hatchet. Roads are cut in every direction, requiring the demolition of thousands of fine young trees. Wagons and logs are dragged over them, bending, breaking, and bruising every shrub or sprout in the way. The whole region has been nearly dismantled of its chestnut oak. The bark has been taken away, and the remainder—trunk and branches—lie rotting on the ground. The poplars and the walnuts are about gone; and the white oaks are fast following in their wake. Hundreds are felled in a few days; those that are good have two or three sections cut from them, and the trunks and branches are left to decay. If others are not found to be so good in timber when felled, they are left to rot with the trunks and branches of the others. If we pass through those regions, we see on every side the most mischievous waste or the most criminal destruction.

But the evil does not end yet; for often among the felled tops and withered shrubs, fires are lighted by careless or vicious hands, to sweep in conflagrations among the dead waste, the prepared lumber and the green trees. Sometimes these fires burn for weeks till the clouds, more merciful than

man, send rain to arrest the desolation. It has sometimes occurred that the leaves have been set on fire that a few chestnuts might be gathered, and, in consequence, many acres of land have been burned over, entailing utter extermination of the young growth.

POLITICAL INJURY.

Over part of this region there have been injuries of a different character, and which have extended over whole counties in the State, outside of this district. They have grown out of the extension of railroads through or near some of the wooded regions, where farms and pastures had been opened, but still surrounded by an almost untouched forest. The farms, with all farming and stock-raising interests, have been neglected, and every man almost has gone into some kind of timber destruction—tan-bark, hoop-poles, cross-ties, lumber, etc. Young men are led from home and its quiet agricultural pursuits, and few ever return. The introduction of vicious elements bring ruin in morals and manners; and the aged are dependent on their own exertions. What were once smiling farms and happy homes too often are now but neglected fields and saddened firesides.

The lands ruined of their timbers have become almost worthless; farms overgrown with weeds, and pastures disregarded, have decreased in value. All these are direct and baneful losses to the State. The money received for those timbers has rarely been retained. It has gone into the pockets of speculators from a distance, or been spent in supplying the losses from the destruction of farming interests. The lands are poorer, the citizens are more needy, and the State is a loser. Had intelligence ruled, those lands would have been a continuous source of wealth to the people; the farms would have been improved with some of the proceeds of the forests cut at the proper time, and a part would have been invested in good teachers, books, and other means of improvement, which make homes brighter and people more intellectual and happier.

Other countries have been so despoiled of their forests and afflicted with the consequent evils, that their governments have had to extend the strong arm of the law, take possession of all the timber growth, and protect what has been left from ultimate destruction. They have also encouraged its restoration under wise provisions, until the people could be taught to take care of it for themselves. It seems that here the same course will have to be taken, and the sooner the better for the good of both the individual and the Commonwealth. This is the only remedy. People educate themselves slowly, and the fostering care and encouragement given by the State to education is not, by any means, too generous.

States pass bills creating sanitary commissions and boards of health; but neither State, commissioners, or boards prevent the accumulations of sawdust in towns and country, which rots and festers in the rain and sunshine, breeding disease and death among the people. A State may provide agents and money to place new species of fish in our streams, but it does not restrain the saw-mill from throwing its waste into those streams to the destruction of the fish.

REPRODUCTION OF YOUNG TREES.

In looking over this region, there appears to be no condition which prevents, if left to themselves, a return of the former distribution of forests. Every species which formerly grew over the country exists somewhere over the territory, and young trees are continually propagated by nature. We have not been able to see that the exhaustion of soils by the old forests or by grain-growing has unfitted them for the thriving of the same species over the same lands, where they flourished heretofore. The seed of many species are destroyed in a large measure, and in numerous localities entirely; but this fact does not make their restoration impossible.

The yellow poplar, where the right conditions exist, comes up in immense numbers and is of rapid growth. There are a few places in Garrard county, situated on the Middle Hudson River beds, over which this valuable species has grown up

thick, and delights the eye with its promised magnificence. The same facts are seen on the Subcarboniferous beds.

It has been taught that on some soils in the State the white oak, as a second growth, has largely diminished in proportion to the number contained in the old forests ; but on the Lower Hudson River beds, wherever the seed are not destroyed and the proper conditions exist, this species gives promise of its former abundance. This may be noted in little woodlands, which have been fenced in for grass. The undergrowth is removed, the grass sown, and the ground raked ; the surface is thus loosened, the light and warmth admitted, and the moisture retained. The acorns thus buried produce, as a consequence, young trees in great numbers. White oak trees are cut and their bodies taken away ; but often the tops are left lying on the ground, and among them the acorns fall and are moistened, shaded, and saved from destruction, until they germinate and produce young trees. Over parts of the Crab Orchard Shale, whole areas of woodlands have been destroyed and used for fuel in the manufacture of salts. Families giving all their time to this industry, raised no corn and fed no hogs. The acorns consequently were not so largely destroyed as usual, and the result was that under these conditions the young white oaks came up in numbers as great as any other species. On the Subcarboniferous soils, persons who had farms raised hogs which had the freedom of the woods. These periods are often marked by the absence of young white oaks ; but afterward, when the farmers abandoned stock-raising for the lumber interests, the disappearance of the hogs allowed the reappearance of the young oaks.

Another interesting feature is the fact that nature protects from such entire destruction some seeds, as for example, the bitter acorns, which produce inferior trees for lumber, and disseminates widely such species as red bud, dogwood, etc., and these often come up so thick that they prevent the propagation of better kinds which require more favorable conditions for growth. Black walnuts flourish almost equally as well on all kinds of good soil, and if growing with other trees in thick

woods do well; by themselves or isolated, they give little promise of future value. The beeches seem to reproduce less than any other species in proportion to their original numbers. Moisture-loving trees, their fruit appears to blight by the increasing dryness of the summers. Other species, as chestnuts, hickories, etc., have their seeds more largely destroyed by insects than formerly. The destructive influences at work are many. Over some thin or exhausted soils there are species, like sassafras and sumac, which come up in dense thickets, and exclude every other species. This feature is evidently the work of nature to restore those soils for the growth of other trees; for no such conditions exist in old forests.

Red cedar has spread from its former restricted limits; but confines itself nearly to places with dry conditions and with limestone rocks. The ailanthus has spread more extensively than any introduced tree, partly because it seems well adapted to the soils, and partly because the seed are easily scattered by the wind. The American holly is seen here only in small bushes on the Black Slate, and in limited numbers on restricted areas. The catalpa, though introduced here many years ago, has not reproduced itself over the country. It spreads from its roots occasionally, but seldom otherwise. The Chickasaw plum has scattered over parts of the Lower Hudson River beds, and grows and produces well. It seems remarkable, that of all the trees and shrubs introduced here since the settlement of this region, the ailanthus as a tree, and the Chickasaw plum as a shrub, are the only ones that have adapted themselves so as to appear native, unless it be the willows on the streams, some of which have probably been introduced. It would seem from these facts, the original dissemination of species required much more time than merely for the distribution of seed. The presence of some of the pines, of birches, of azaleas, and rhododendrons, within a score or two of miles of this region, and their entire absence here, where the same conditions appear to exist, is an unexplained problem.

FERNS.

With the light of sunset glowing, Nature with her magic hand,
Till their rival glories blending, painted *flowers* o'er the land;
With the light of early morning, with her pencil dip't in dew,
She, the dainty *fern-leaves* sketching, all their lines of beauty drew;
Waved she then her pencil dripping, on the rock and hill and dell—
Dew-drops all to *mosses* turning, where the tiny crystals fell.

Those lowly plants to which were given no true seed, and from which nature has withheld all semblance of flowers, are not without interest. Though they do not furnish us with shelter or food or raiment, yet they enter into the class of soil-making plants and assist in shading, moistening, and preserving the surface of the ground. Ferns appeal to our admiration in the purity and delicacy of their parts, and the gracefulness of their outlines. A love for them seems to be natural in every heart. The rough man, who cares nothing for the names or the relations of general plant life, will often stop to gaze on a bed of ferns; the young maiden presses them beneath her pillow, that she may have happy dreams, and the little children seek them, scarcely knowing why.

While strolling through the woods one day, far from the homes of culture and refinement, we met a little unkempt boy, who knew not how to read the books of men, but who had stolen some lessons from the volume of nature opened to him. We had gathered some of the rarer flowers, which were in bloom under the shadows of the ancient trees; observing them, the urchin asked us why we did not get some "shakers?" Upon telling him we did not know them, he proposed to lead us to where they grew. Following him over the soft ground, under the shade of trees, and by the tendril climbing vines, we reached a lovely bed of maiden-hair. As we seated ourselves on a downy bed of moss to talk about and admire the clustered beauties, we saw his bright eyes flash with a love born of the beautiful, and our heart grew tender towards him. Knowing no such name as bracken, brake, or fern, the tremulous motion of the dainty plant had suggested the name, and all the different species of ferns were called by him "shakers."

When we sometimes in memory go back to the poor bare-footed boy, who roamed those grand old forests, these beautiful plants are still "shakers" even to us.

A few notes on their distribution over this region will not be uninteresting to the botanists and other lovers of these charming and diversified plants.

The little *scaly polypody* is more often seen growing in the mosses on the old sycamore trees, on the banks of Chaplin and Salt rivers, in Mercer county, than any other localities in this district. It is to be sometimes found on the limestones near the Kentucky river, and also on the highest sandstones of the Knobs in Marion county.

The *maiden hair fern* through the whole district, wherever the conditions of its growth have not been destroyed, may be found clustered in the rich soils where the shades lie all through the day. It seems to love equally well the deep shadows by the streams, and the secluded shelters in the Knobs.

The *clothed lip-fern* is very rare, and we only found it on two occasions. It was growing in dense beds on sandstone rocks, tightly wedged in their crevices, at the top of the tallest Knobs which rise above the valley of the Rolling Fork of Salt river, in the neighborhood of Bradfordsville, Marion county.

The *common bracken* is found only on the highest hills where the Carboniferous soils allow suitable conditions for its preservation.

The *cliff-brake* is very hardy, and is to be seen nearly everywhere that limestones are exposed enough to give provisions for its growth. Requiring little soil or moisture, it seems to feed upon the air and the rocks.

The *pinnatifid spleenwort* was only once seen; a few plants grew on the face of a bluff, composed of Subcarboniferous sandstone, near the boundary line of Larue and Marion counties.

Of that rare hybrid, the *Asplenium ebenoides*, we found three plants, growing on a fallen mass of sandstone, near Salt Lick

creek, in Marion county. They were surrounded by the ebony spleenwort and the walking-leaf fern.

The *maiden-hair spleenwort* was not met with, strictly, in this district, but was seen at Broadhead Station, a few miles from the Lincoln county line. It was growing on the Subcarboniferous shales, close to the banks of Dix river.

The *ebony spleenwort* is a very common fern, and is to be seen, with its small relation, on nearly all the shaded rocks, and on many soils around the roots of old trees.

The *wall rue spleenwort* has been mentioned as growing on the heavy limestones above the Kentucky river and Dix river. It is confined to one ledge of rocks, and follows the dips up and down the streams, but never appears on other ledges, or, as far as we know, at any other station in this region.

The *walking-leaf fern* grows on nearly all the heavy limestones, and has several times been seen growing in moss for several feet up the trunks of old trees.

The *beech ferns* are plentiful all through the Knobs, and are, besides, met with often in the deepest, shadiest woods in the other parts of the country.

The *New York shield fern* is not found in a great many localities, but where it is seen the numbers are often great. It is among the most delicate of all the species.

The *marginal shield fern* and the *winter fern* are very common forms on the cliffs near the streams, and on the northern slopes among the hills in all the counties.

The *bladder ferns* are the most widely and frequently distributed of any other species, and may be found commonly in each of the counties.

The *sensitive fern* has few habitats in these counties, but has been seen in damp hollows in Marion and Madison counties.

The *obtusely-leaved woodsia* clusters in the Carboniferous limestones along the edge of the Knobs, and in the fallen rocks from the walls of the Kentucky river; the rich green of its fronds ever making a pleasing picture with the bare rocks in the background.

The *royal fern* and the *cinnamon fern* grow exclusively in the most remote parts of the district, where the mold of centuries covers the ground, and the leaves from tree and shrub have made them beds.

The *moonworts* are scattered through the woods all over the region wherever they have moisture, shade, and rich soils.

CATALOGUE OF THE FLOWERING PLANTS AND FERNS OF MADISON, LINCOLN, GARRARD, WASHINGTON, AND MARION COUNTIES.

ORDER RANUNCULACEÆ—CROWFOOT FAMILY.

Genus Clematis, Virgin's Bower.

1. Leather flower, *Clematis viorna* (L.)
2. Common Virgin's Bower, *C. Virginiana* (L.)

Genus Anemone, Wind-flower.

3. Virginia anemone, *Anemone Virginiana* (L.)
4. Carolina anemone, *A. Caroliniana* (Walt.)
5. Wind-flower, *A. nemorosa* (L.)

Genus Hepatica, Liver-leaf.

6. Round-lobed hepatica, *Hepatica triloba* (Chaix.)
7. Sharp lobed hepatica, *H. acutiloba* (DC.)

Genus Thalictrum, Meadow-Rue.

8. Early Meadow-Rue, *Thalictrum dioicum* (L.)
9. Rue-Anemone, *T. anemonoides* (Michx.)
10. Tall Meadow-Rue, *T. Cornuti* (L.)
11. —————, *T. clavatum?* (DC.)

Genus Ranunculus, Crowfoot.

White Water-Crowfoot, *Ranunculus aquatilis* (L.)

12. —————, VAR. *trichophyllus* (Chaix.)
13. Small-flowered Crowfoot, *R. abortivus* (L.)

14. Hooked Crowfoot, *R. recurvatus* (Poir.)
15. Bristly Crowfoot, *R. Pennsylvanicus* (L.)
16. Early Crowfoot, *R. fascicularis* (Muhl.)
17. Creeping Crowfoot, *R. repens* (L.)
18. Tall Crowfoot, *R. acris* (L.)
19. Small-flowered Crowfoot, *R. parviflorus* (L.)

Genus Isopyrum, False Rue-Anemone. [& Gray).

20. False Rue-Anemone, *Isopyrum biternatum* (Torr.

Genus Aquilegia, Columbine.

21. Wild Columbine, *Aquilegia Canadensis* (L.)

Genus Delphinium, Larkspur.

22. Tall Larkspur, *Delphinium exaltatum* (Ait.)
23. Dwarf Larkspur, *D. tricornis* (Michx.)
24. Azure Larkspur, *D. azureum* (Michx.)
25. Field Larkspur, *D. consolida* (L.)

Genus Zanthoriza, Shrub Yellow-Root.

26. Shrub Yellow-Root, *Zanthoriza apifolia* (L'Her.)

Genus Hydrastis, Yellow Puccoon.

27. Yellow-root, *Hydrastis canadensis* (L.)

Genus Actæa, Baneberry.

28. Red Baneberry, *Actæa spicata*.
 —————, VAR. *rubra* (L.)
29. White Baneberry, *A. alba* (Bigel.)

Genus Cimicifuga, Bugbane.

30. Black Snakeroot, *Cimicifuga racemosa* (Eu.)
31. American Bugbane, *C. Americana* (Michx.)

ORDER MAGNOLIACEÆ—MAGNOLIA FAMILY.

Genus Magnolia, Magnolia.

32. Cucumber-tree, *Magnolia acuminata* (L.)
33. Great-leaved Magnolia, *M. Macrophylla* (Michx.)

Genus Liriodendron, Tulip-tree.

34. Yellow Poplar, *Liriodendron Tulipifera* (L.)

ORDER ANONACEÆ—CUSTARD-APPLE FAMILY.

Genus Asimina, North American Papaw.

35. Common Papaw, *Asimina triloba* (Dunal.)

ORDER MENISPERMACEÆ—MOONSEED FAMILY.

Genus Cocculus, Cocculus.

36. Cocculus, Cocculus Carolinus (DC.)

Genus Menispermum, Moonseed.

37. Canadian Moonseed, Menispermum Canadense (L.)

ORDER BERBERIDACEÆ—BARBERY FAMILY.

Genus Caulophyllum, Blue Cohosh.

38. Pappoose root, Caulophyllum thalictroides (Michx.)

Genus Jeffersonia, Twin-leaf.

39. Twin-leaf, Jeffersonia diphylla (Pers.)

Genus Podophyllum, Mandrake.

40. May apple, Podophyllum peltatum (L.)

ORDER NYMPHÆACEÆ—WATER-LILY FAMILY.

Genus Nuphar, Yellow Pond-Lily.

41. Common Yellow Pond-Lily, Nuphar advena (Ait.)

ORDER PAPAVERACEÆ—POPPY FAMILY.

Genus Stylophorum, Celandine Poppy.

42. Celandine Poppy, Stylophorum diphyllum (Nutt.)

Genus Sanguinaria, Blood-root.

43. Red Puccoon, Sanguinaria Canadensis (L.)

ORDER FUMARIACEÆ—FUMITORY FAMILY.

Genus Dicentra, Dutchman's Breeches.

44. Dutchman's Breeches, Dicentra Cucullaria (DC.)

45. Squirrel Corn, D. Canadensis (DC.)

Genus Corydalis, Corydalis.

46. Pale Corydalis, Corydalis glauca (Pursh.)

47. Yellow Corydalis, C. flavula (Raf.)

ORDER CRUCIFERÆ—MUSTARD FAMILY.

Genus Nasturtium, Water-Cress.

48. —————, Nasturtium sessiliflorum (Nutt.)

49. Marsh Cress, N. palustre (DC.)

Genus Dentaria, Toothwort.

50. Two-leaved Pepper-Root, Dentaria diphylla (L.)

51. —————, D. heterophylla (Nutt.)

52. —————, D. laciniata (Muhl.)

Genus Cardamine, Bitter Cress.

53. Spring Cress, *Cardamine rhomboidea* (DC.)

Genus Arabis, Rock Cress.

54. —————, *Arabis Ludoviciana* (Meyer).
 55. —————, *A. lyrata* (L.)
 56. —————, *A. patens* (Sulliv.)
 57. —————, *A. lævigata* (DC.)
 58. Sickie Pod, *A. Canadensis* (L.)
 59. —————, *A. hesperidoides* (Michx.)
 60. Tower Mustard, *A. perfoliata* (Lam.)

Genus Sisymbrium, Hedge Mustard.

61. Hedge Mustard, *Sisymbrium officinale* (Scop.)

Genus Brassica, Mustard.

62. White Mustard, *Brassica alba* (L.)
 63. Black Mustard, *B. nigra* (Koch.)

Genus Draba, Whitlow Grass.

64. —————, *Draba ramosissima* (Desv.)
 65. —————, *D. cuneifolia* (Nutt.)
 66. Whitlow Grass, *D. verna* (L.)

Genus Capsella, Shepherd's Purse.

67. Shepherd's Purse, *Capsella Bursa-pastoris* (Mœnch).

Genus Lepidium, Pepperwort.

68. Wild Peppergrass, *Lepidium Virginicum* (L.)

ORDER VIOLACEÆ—VIOLET FAMILY.

Genus Solea, Green Violet.

69. Green Violet, *Solea concolor* (Ging.)

Genus Viola, Violet.

70. Round-leaved Violet, *Viola rotundifolia* (Michx.)
 71. Lance-leaved Violet, *V. lanceolata* (L.)
 72. Sweet White Violet, *V. blanda* (Willd.)
 73. Common Blue Violet, *V. cucullata* (Ait.)
 74. Hand-leaved Violet, *VAR. palmata* (Gray.)
 75. Bird-foot Violet, *V. pedata* (L.)
 76. Long-spurred Violet, *V. rostrata* (Pursh.)
 77. —————, *VAR. bicolor*.
 78. Pale Violet, *V. striata* (Ait.)

79. Canada Violet, *V. Canadensis* (L.)

80. Downy Yellow Violet, *V. pubescens* (Ait.)

ORDER CISTACEÆ—ROCK-ROSE FAMILY.

Genus Hudsonia, ———.

81. ———, *Hudsonia ericoides* (L.)

ORDER HYPERICACEÆ—ST. JOHN'S WORT FAMILY.

Genus Ascyrum—*St. Peter's Wort*.

82. St. Andrew's Cross, *Ascyrum crux-Andreae* (L.)

Genus Hypericum, *St. John's Wort*. [(Ait.)

83. Great St. John's Wort, *Hypericum pyramidatum*

84. Shrubby St. John's Wort, *H. prolificum* (L.)

85. Shrubby St. John's Wort, VAR. *densiflorum*.

86. ———, *H. dolâbriforme* (Vent.)

87. Winged St. John's Wort, *H. angulosum* (Michx.)

88. Common St. John's Wort, *H. perforatum* (L.)

89. ———, *H. corymbosum* (Muhl.)

ORDER ELATINACEÆ—WATER WORT FAMILY.

Genus Elatine, *Water Wort*.

90. Water Wort, *Elatine Americana* (Arnott.)

ORDER CARYOPHYLLACEÆ—PINK FAMILY.

Genus Saponaria, *Soapwort*.

91. Bouncing Bet, *Saponaria officinalis* (L.)

Genus Silene, *Catchfly*.

92. Starry Campion, *Silene stellata* (Ait.)

93. Wild Pink, *S. Pennsylvanica* (Michx.)

94. Fire Pink, *S. Virginica* (L.)

95. Royal Catchfly, *S. regia* (Sims.)

96. Round-leaved Catchfly, *S. rotundifolia* (Nutt.)

Genus Lychnis, *Lychnis*.

97. Corn Cockle, *Lychnis Githago* (Lam.)

Genus Arenaria, *Sandwort*.

98. ———, *Arenaria paluta* (Michx.)

Genus Stellaria, *Chickweed*.

99. Common Chickweed, *Stellaria Media* (Smith).

100. Great Chickweed, *S. pubera* (Michx.)

*Genus Cerastium, Mouse-ear Chickweed.*101. Mouse-ear Chickweed, *Cerastium vulgatum* (L.)102. Larger Mouse-ear Chickweed, *C. viscosum* (L.)*Genus Anychia, Forked Chickweed.*103. Forked Chickweed, *Anychia dichotoma* (Michx.)*Genus Mollugo, Indian Chickweed.*104. Carpet-weed, *Mollugo verticillata* (L.)

ORDER PORTULACACEÆ—PURSLANE FAMILY.

*Genus Portulaca, Purslane.*105. Common Purslane, *Portulaca oleracea* (L.)*Genus Claytonia, Spring Beauty.*106. Spring Beauty, *Claytonia Virginica* (L.)

ORDER MALVACEÆ—MALLOW FAMILY.

*Genus Malva, Mallow.*107. Common Mallow, *Malva rotundifolia* (L.)*Genus Sida, Sida.*108. Flux Weed, *Sida spinosa* (L.)*Genus Abutilon, Indian Mallow.*109. Velvet Leaf, *Abutilon Avicennæ* (Gærtn.)*Genus Hibiscus, Rose Mallow.*110. Swamp Rose Mallow, *Hibiscus Moscheutos* (L.)111. Bladder Ketmia, *H. trionum* (L.)

ORDER TILIACEÆ—LINDEN FAMILY.

*Genus Tilia, Basswood.*112. Basswood Linden, *Tilia Americana* (L.)113. White Linden, *T. heterophylla* (Vent.)

ORDER LINACEÆ—FLAX FAMILY.

*Genus Linum, Flax.*114. Wild Flax, *Linum Virginianum* (L.)115. Common Flax, *L. usitatissimum* (L.)

ORDER GERANIACEÆ—GERANIUM FAMILY.

*Genus Geranium, Geranium.*116. Wild Cranesbill, *Geranium maculatum* (L.)117. Herb Robert, *G. Robertianum* (L.)

Genus Impatiens, Balsam.

118. Pale Touch me-not, *Impatiens pallida* (Nutt.)
 119. Spotted Touch-me-not, *I. Fulva* (Nutt.)

Genus Oxalis, Wood Sorrel.

120. Common Wood Sorrel, *Oxalis Acetosella* (L.)
 121. Violet Wood Sorrel, *O. violacea* (L.)
 122. Sheep Sorrel, *O. stricta* (L.)

ORDER RUTACEÆ—RUE FAMILY.

Genus Zanthoxylum, Prickly Ash. [(Mill.)]

123. Northern Prickly Ash, *Zanthoxylum Americanum*

Genus Ptelea, Hop-tree.

124. Wafer Ash, *Ptelea trifoliata* (L.)

ORDER SIMARUBACEÆ—QUASSIA FAMILY.

Genus Ailanthus, Tree of Heaven.

125. Tree of Heaven, *Ailanthus glandulosus* (Desf.)

ORDER ANACARDIACEÆ—CASHEW FAMILY.

Genus Rhus, Sumac.

126. Staghorn Sumac, *Rhus typhina* (L.)
 227. Smooth Sumac, *R. glabra* (L.)
 128. Dwarf Sumac, *R. copallina* (L.)
 129. Poison Oak, *R. Toxicodendron* (L.)
 130. Aromatic Sumac, *R. aromatica* (Ait.)

ORDER VITACEÆ—VINE FAMILY.

Genus Vitis, Grape.

131. Northern Fox Grape, *Vitis Labrusca* (L.)
 132. Summer Grape, *V. æstivalis* (Michx.)
 133. Winter Grape, *V. cordifolia* (Michx.)
 134. —————, *VAR. riparia* (Michx.)
 135. —————, *V. indivisa* (Willd.)

Genus Ampelopsis, Virginian Creeper. [(Michx.)]

136. Virginian Creeper, *Ampelopsis quinquefolia*

ORDER RHAMNACEÆ—BUCKTHORN FAMILY.

Genus Rhamnus, Buckthorn. [(Pursh.)]

137. Lance-leaved Buckthorn, *Rhamnus lanceolatus*

Genus Frangula, Alder Buckthorn.

138. Indian Cherry, *Frangula Caroliniana* (Gray.)

ORDER CELASTRACEÆ—STAFF-TREE FAMILY.

Genus Celastrus, Staff-tree.

139. Climbing Bitter-sweet, *Celastrus scandens* (L.)

Genus Euonymus, Spindle-tree.

140. Waahoo, *Euonymus atropurpureus* (Jacq.)
 141. Strawberry Bush, *E. Americanus* (L.)
 142. —————, VAR. *obovatus* (Torr. & Gray.)

ORDER SAPINDACEÆ—SOAPBERRY FAMILY.

Genus Staphylea, Bladder Nut.

143. American Bladder Nut, *Staphylea trifolia* (L.)

Genus Æsculus, Buckeye.

144. Ohio Buckeye, *Æsculus glabra* (Willd.)
 145. Sweet Buckeye, *Æ. flava* (Ait.)
 146. Small Buckeye, *Æ. Pavia* (L.)

Genus Acer, Maple.

147. Sugar-tree, *Acer saccharinum* (Wang.)
 148. Black Sugar-tree, VAR. *nigrum* (Gray.)
 149. Water Maple, *A. dasycarpum* (Ehrhart.)
 150. Red Maple, *A. rubrum* (L.)

Genus Negundo, Ash-leaved Maple.

151. Box Elder, *Negundo aceroides* (Mœnch.)

ORDER POLYGALACEÆ—MILKWORT FAMILY.

Genus Polygala, Milkwort.

152. —————, *Polygala fastigiata* (Nutt.)
 153. Seneca Snakeroot, *P. Senega* (L.)

ORDER LEGUMINOSÆ—PULSE FAMILY.

Genus Crotalaria, Rattle-box.

154. Rattle-box, *Crotalaria sagittalis* (L.)

Genus, Trifolium, Clover.

155. Rabbit-foot Clover, *Trifolium arvense* (L.)
 156. Red Clover, *T. pratense* (L.)
 157. Buffalo Clover, *T. reflexum* (L.)
 158. White Clover, *T. repens* (L.)
 159. Yellow Clover, *T. agrarium* (L.)
 160. Low Hop Clover, *T. procumbens* (L.)

Genus Melilotus, Melilot.

161. Yellow Sweet Clover, *Melilotus officinalis* (Willd.)
 162. White Sweet Clover, *M. alba* (Lam.)

Genus Medicago, Medick.

163. Lucerne, *Medicago, sativa* (L.)

Genus Psoralea, Psoralea.

164. —————, *Psoralea melilotoides* (Michx.)

Genus Robinia, Locust tree.

165. Black Locust, *Robinia Pseudacacia* (L.)

Genus Wistaria, Wistaria.

166. Lincoln's Bower, *Wistaria frutescens* (DC.)

Genus Æschynomene, Sensitive Joint Vetch. [(Willd.)]

167. Sensitive Joint Vetch, *Æschynomene hispida*

Genus Desmodium, Tick Trefoil.

168. —————, *Desmodium nudiflorum* (DC.)
 169. —————, *D. acuminatum* (DC.)
 170. —————, *D. pauciflorum* (DC.)
 171. —————, *D. rotundifolium* (DC.)
 172. —————, *D. ochroleucum* (M. A. Curtis.)
 173. —————, *D. canescens* (DC.)
 174. —————, *D. viridiflorum* (Beck.)
 175. —————, *D. paniculatum* (DC.)
 176. —————, *D. Canadense* (DC.)
 177. —————, *D. sessilifolium* (Torr. & Gray.)
 178. —————, *D. Marilandicum* (Boott.)

Genus Lespedeza, Bush Clover.

179. —————, *Lespedeza violacea* (Pers.)
 180. —————, *L. hirta* (Ell.)

Genus Stylosanthes, Pencil Flower.

181. Pencil Flower, *Stylosanthes elatior* (Swartz.)

Genus Vicia, Tare.

182. —————, *Vicia Cracca* (L.)
 183. —————, *V. Caroliniana* (Walt.)
 184. —————, *V. Americana* (Muhl.)

Genus Phaseolus, Kidney Bean.

185. Wild Bean, *Phaseolus perennis* (Walt.)

Genus Centrosema, Spurred Butterfly Pea.

186. —————, *Centrosema Virginianum* (Benth.)

Genus Baptisia, False Indigo.

187. Blue False Indigo, *Baptisia australis* (R. Br.)

Genus Cladrastis, Yellow Wood.

188. Yellow Wood, *Cladrastis tinctoria* (Raf.)

Genus Cercis, Judas Tree.

189. Red-bud, *Cercis Canadensis* (L.)

Genus Cassia, Senna.

190. Wild Senna, *Cassia Marilandica* (L.)

191. Partridge Pea, *C. chamæcrista* (L.)

192. Wild Sensitive Plant, *C. nictitans* (L.)

Genus Gymnocladus, Kentucky Coffee-tree.

[(Lam.)

193. Kentucky coffee-bean, *Gymnocladus Canadensis*

Genus Gleditschia, Honey Locust.

194. Honey Locust, *Gleditschia triacanthos* (L.)

ORDER ROSACEÆ—ROSE FAMILY.

Genus Prunus, Plum.

195. Wild Plum, *Prunus Americana* (Marshall.)

196. Chickasaw Plum, *P. Chicasa* (Michx.)

197. Wild Red Cherry, *P. Pennsylvanica* (L.)

198. Wild Black Cherry, *P. serotina* (Ehrhart.)

Genus Spiræa, Meadow Sweet.

199. Nine Bark, *Spiræa opulifolia* (L.)

Genus Gillenia, Indian Physic.

200. Bowman's Root, *Gillenia trifoliata* (Mœnch.)

201. Indian Physic, *G. stipulacea* (Nutt.)

Genus Agrimonia, Agrimony.

202. Common Agrimony, *Agrimonia Eupatoria* (Ait.)

203. Small-flowered Agrimony *A. parviflora* (L.)

Genus Geum, Avena.

204. —————, *Geum album* (Gmelin.)

205. —————, *G. vernum* (Torr. & Gray.)

Genus Potentilla, Cinque-foil.

- 206. Five-finger, *Potentilla Canadensis* (L.)
- 207. —————, VAR. *simplex* (Torr. & Gray.)
- 208. Silvery Cinque-foil, *P. argentea* (L.)

Genus Fragaria, Strawberry.

- 209. —————, *Fragaria Virginiana* (Ehrhart.)
- 210. —————, *F. vesca* (L.)
- 211. —————, *F. Indica* (L.)

Genus Rubus, Bramble.

- 212. Wild Raspberry, *Rubus occidentalis* (L.)
- 213. Common Blackberry, *R. villosus* (Ait.)
- 214. Dewberry, *R. Canadensis* (L.)

Genus Rosa, Rose.

- 215. Climbing Wild Rose, *Rosa setigera* (Michx.)
- 216. Swamp Rose, *R. Carolina* (L.)
- 217. Dwarf Wild Rose, *R. lucida* (Ehrhart.)
- 218. Sweet Brier Rose, *R. rubiginosa* (L.)

Genus Cratægus, Hawthorn.

- 219. Evergreen Thorn, *Cratægus Pyracantha* (Pers.)
- 220. Washington Thorn, *C. cordata* (Ait.)
- 221. Hawthorn, *C. Oxyacantha* (L.)
- 222. Scarlet-fruited Thorn, *C. coccinea* (L.)
- 223. Black Thorn, *C. tomentosa* (L.)
- 224. —————, VAR. *punctata* (Jacq.)
- 225. Cockspur Thorn, *C. Crus-galli* (L.)
- 226. Summer Haw, *C. flava* (Ait.)

Genus Pyrus, Apple.

- 227. American Crab-apple, *Pyrus coronaria* (L.)
- 228. Narrow-leaved Crab-apple, *P. augustifolia* (Ait.)
- 229. Mountain Ash, *P. Americana* (DC.)

Genus Amelanchier, June-berry.

[Gray.]

- 230. Service-berry, *Amelanchier Canadensis* (Torr. &
- 231. —————, VAR. *oblongifolia*.

ORDER CALYCANTHACEÆ—CALYCANTHUS FAMILY.

Genus Calycanthus, Sweet-scented Shrub.

- 232. *Calycanthus, Calycanthus floridus* (L.)

ORDER SAXIFRAGACEÆ—SAXIFRAGE FAMILY.

Genus Ribes, Gooseberry.

233. Prickly Wild Gooseberry, *Ribes Cynosbati* (L.)
 234. Common Wild Gooseberry, *R. rotundifolium*

Genus Hydrangea, Hydrangea. [(Michx.)]

235. Wild Hydrangea, *Hydrangea arborescens* (L.)

Genus Saxifraga, Saxifrage.

236. Early Saxifrage, *Saxifraga Virginiensis* (Michx.)

Genus Heuchera, Alum-root.

237. —————, *Heuchera villosa* (Michx.)
 238. Common Alum-root, *H. Americana* (L.)
 239. —————, *H. pubescens* (Pursh.)

Genus Mitella, Mitre-wort.

240. Bishop's Cap, *Mitella diphylla* (L.)

ORDER CRASSULACEÆ—ORPINE FAMILY.

Genus Penthorum, Ditch Stone-crop.

241. Ditch Stone-crop, *Penthorum sedoides* (L.)

Genus Sedum, Orpine.

242. Stone-crop, *Sedum pulchellum* (Michx.)
 243. Cliff Moss, *S. ternatum* (Michx.)

ORDER HAMAMELACEÆ—WITCH-HAZEL FAMILY.

Genus Hamamelis, Witch-hazel.

244. Witch-hazel, *Hamamelis Virginica* (L.)

Genus Liquidambar, Sweet-gum Tree.

245. Sweet-gum, *Liquidambar Styraciflua* (L.)

ORDER ONAGRACEÆ—EVENING-PRIMROSE FAMILY.

Genus Circæa, Enchanter's Nightshade.

246. Enchanter's Nightshade, *Circæa Lutetiana* (L.)

Genus Gaura, Gaura.

247. —————, *Gaura biennis* (L.)
 248. —————, *G. filipes* (Spach.)

Genus Epilobium, Willow-herb.

249. Willow-herb, *Epilobium coloratum* (Muhl.)

Genus Enothera, Evening-Primrose.

250. Common Evening-Primrose, *Enothera biennis* (L.)
 251. —————, VAR. *grandiflora*.
 252. —————, *Æ. triloba* (Gray.)
 253. —————, *Æ. pumila* (L.)

Genus Ludwigia, False Loosestrife.

254. Seed-box, *Ludwigia alternifolia* (L.)

ORDER MELASTOMACEÆ—MELASTOMA FAMILY.

Genus Rhexia, Meadow Beauty.

255. Deer Grass, *Rhexia Virginica* (L.)

ORDER LYTHRACEÆ—LOOSESTRIFE FAMILY.

Genus Cuphea, Cuphea.

256. Clammy Cuphea, *Cuphea viscosissima* (Jacq.)

ORDER CACTACEÆ—CACTUS FAMILY.

Genus Opuntia, Indian Fig.

257. Prickly Pear, *Opuntia Rafinesquii* (Engelm.)

ORDER PASSIFLORACEÆ—PASSION FLOWER FAMILY.

Genus Passiflora, Passion Flower.

258. Small Passion Flower, *Passiflora Lutea* (L.)
 259. Common Passion Flower, *P. incarnata* (L.)

ORDER CUCURBITACEÆ—GOURD FAMILY.

Genus Sicyos, One-seeded Star-cucumber.

260. One-seeded Star-cucumber, *Sicyos angulatus* (L.)

ORDER UMBELLIFERÆ—PARSLEY FAMILY.

Genus Sanicula, Sanicle.

261. Black Snakeroot, *Sanicula Canadensis* (L.)

Genus Daucus, Carrot.

262. Wild Carrot, *Daucus Carota* (L.)

Genus Pastinaca, Parsnip.

263. Wild Parsnip, *Pastinaca sativa* (L.)

Genus Thaspium, Meadow Parsnip.

264. Meadow Parsnip, *Thaspium aureum* (Nutt.)

Genus Chærophylum, Chervil.

265. Chervil, *Chærophylum procumbens* (Lam.)

Genus Osmorrhiza, Sweet Cicely. [(DC.)

266. Smoother Sweet Cicely, *Osmorrhiza longistylis*

267. Hairy Sweet Cicely, *O. brevistylis* (DC.)

Genus Erigenia, Harbinger of Spring.

268. Turkey Pea, *Erigenia bulbosa* (Nutt.)

ORDER ARALIACEÆ—GINSENG FAMILY.

Genus Aralia, Ginseng.

269. Hercules' Club, *Aralia spinosa* (L.)

270. Spikenard, *A. racemosa* (L.)

271. Wild Sarsaparilla, *A. nudicaulis* (L.)

271. Ginseng, *A. quinquefolia* (L.)

ORDER CORNACEÆ—DOGWOOD FAMILY.

Genus Cornus, Cornel.

273. Flowering Dogwood, *Cornus florida* (L.)

274. Round-leaved Dogwood, *C. circinata* (L'Her.)

275. Silky Cornel, *C. sericea* (L.)

276. Red osier Dogwood, *C. stolonifera* (Michx.)

277. Rough-leaved Dogwood, *C. asperifolia* (Michx.)

278. Panicked Cornel, *C. paniculata* (L'Her.)

279. Alternate-leaved Cornel, *C. alternifolia* (L.)

Genus Nyssa, Gum.

280. Black Gum, *Nyssa multiflora* (Wang.)

281. Yellow Gum, *N. uniflora* (Walt.)

ORDER CAPRIFOLIACEÆ—HONEYSUCKLE FAMILY.

Genus Symphoricarpus, Snowberry.

282. Buckberry, *Symphoricarpus vulgaris* (Michx.)

Genus Lonicera, Woodbine.

283. Yellow Honeysuckle, *Lonicera flava* (Sims.)

284. Small Honeysuckle, *L. parviflora* (Lam.)

Genus Triosteum, Horse Gentian.

285. Fever-wort, *Triosteum perfoliatum* (L.)

Genus Sambucus, Elder.

286. Common Elder, *Sambucus Canadensis* (L.)

287. Red-berried Elder, *S. pubens* (Michx.)

Genus Aster, Starwort.

311. —————, *Aster cordifolius* (L.)
312. —————, *A. sagittifolius* (Willd.)
313. —————, *A. tenuifolius* (L.)
314. —————, *A. carneus* (Nees.)

Genus Erigeron, Fleabane.

315. Butter-weed, *Erigeron Canadense* (L.)
316. Robin's Plantain, *E. bellidifolium* (Muhl.)
317. Common Fleabane, *E. Philadelphicum* (L.)
318. Sweet Scabious, *E. annuum* (Pers.)
319. Daisy Fleabane, *E. strigosum* (Muhl.)

Genus Bellis, Daisy.

320. Western Daisy, *Bellis integrifolia* (Michx.)

Genus Solidago, Golden-rod.

321. —————, *Solidago speciosa* (Nutt.)
322. —————, *S. altissima* (L.)
323. —————, *S. ulmifolia* (Muhl.)

Genus Chrysopsis, Golden Aster.

324. —————, *Chrysopsis gossypina* (Nutt.)

Genus Inula, Elecampane.

325. Common Elecampane, *Inula Helenium* (L.)

Genus Polymnia, Leaf Cup.

326. Leaf Cup, *Polymnia Uvedalia* (L.)

Genus Silphium, Rosin Plant.

327. Prairie Dock, *Silphium terebinthinaceum* (L.)
328. —————, *S. trifoliatum* (L.)

Genus Ambrosia, Ragweed.

329. Horseweed, *Ambrosia trifida* (L.)
330. Ragweed, *A. artemisiæfolia* (L.)

Genus Xanthium, Clotbur.

331. Cocklebur, *Xanthium strumarium* (L.)
332. —————, VAR. *echinatum* (Murr.)

Genus Heliopsis, Ox-eye.

333. Ox-eye, *Heliopsis lævis* (Pers.)

Genus Viburnum, Arrow-wood.

- 288. Sweet Viburnum, *Viburnum Lentago* (L.)
- 289. Black Haw, *V. prunifolium* (L.)
- 290. Arrow-wood, *V. dentatum* (L.)
- 291. Maple-leaved Arrow-wood, *V. acerifolium* (L.)

ORDER RUBIACEÆ—MADDER FAMILY.

Genus Galium, Bedstraw.

- 292. Goose Grass, *Galium Aparine* (L.)
- 293. Rough Bedstraw, *G. asprellum* (Michx.)
- 294. Small Bedstraw, *G. trifidum* (L.)
- 295. Sweet-scented Bedstraw, *G. triflorum* (Michx.)

Genus Cephalanthus, Button-bush.

- 296. Button-bush, *Cephalanthus occidentalis* (L.)

Genus Houstonia, Houstonia.

- 297. —————, *Houstonia purpurea* (L.)
- 298. —————, VAR. *longifolia*.
- 299. —————, *H. augustifolia* (Michx.)
- 300. Bluets, *H. cærulea* (L.)

ORDER DIPSACEÆ—TEASEL FAMILY.

Genus Dipsacus, Teasel.

- 301. Wild Teasel, *Dipsacus sylvestris* (Mill.)

ORDER COMPOSITÆ—COMPOSITE FAMILY.

Genus Vernonia, Iron-weed.

- 302. Iron-weed, *Vernonia Noveboracensis* (Willd.)

Genus Elephantopus, Elephant's-foot.

- 303. Elephant's foot, *Elephantopus Carolinianus* (Willd.)

Genus Eupatorium, Thoroughwort.

- 304. Joe Pye Weed, *Eupatorium purpureum* (L.)
- 305. Hyssop-leaved Thoroughwort, *E. hyssopifolium* (L.)
- 306. White Boneset, *E. album* (L.)
- 307. Tall Thoroughwort, *E. altissimum* (L.)
- 308. Upland Boneset, *E. sessilifolium* (L.)
- 309. Boneset, *E. perfoliatum* (L.)
- 310. White Snakeroot, *E. ageratoides* (L.)

Genus Rudbeckia, Cone-flower.

334. —————, *Rudbeckia laciniata* (L.)
 335. —————, *R. triloba* (L.)
 336. —————, *R. hirta* (L.)

Genus Echinacea, Purple Cone-flower.

337. Purple Cone-flower, *Echinacea purpurea* (Möench.)

Genus Helianthus, Sunflower.

338. Common Sunflower, *Helianthus annuus* (L.)
 339. —————, *H. atrorubens* (L.)
 340. —————, *H. occidentalis* (Riddell.)
 341. —————, *H. giganteus* (L.)
 342. —————, *H. grosse-serratus* (Martens.)
 343. —————, *H. strumosus* (L.)
 344. —————, *H. divaricatus* (L.)
 345. —————, *H. doronicoides* (Lam.)

Genus Actinomeris, Actinomeris.

346. —————, *Actinomeris squarrosa* (Nutt.)

Genus Coreopsis, Tickseed.

347. —————, *Coreopsis senifolia* (Michx.)
 348. Tall Coreopsis, *C. tripteris* (L.)

Genus Bidens, Bur-marigold.

349. Common Beggar-ticks, *Bidens frondosa* (L.)
 350. Swamp Beggar-ticks, *B. connata* (Muhl.)
 351. Spanish Needles, *B. bipinnata* (L.)

Genus Dysodia, Fetid Marigold.

352. Fetid Marigold, *Dysodia chrysanthemoides* (Lag.)

Genus Helenium, Sneeze-weed.

353. Sneeze-weed, *Helenium autumnale* (L.)

Genus Marula, May-weed.

354. Dog Fennel, *Marula Cotula* (DC.)

Genus Anthemis, Chamomile.

355. Corn Chamomile, *Anthemis arvensis* (L.)

Genus Achillea, Yarrow.

356. Milfoil, *Achillea Millefolium* (L.)

Genus Leucanthemum, Ox-eye Daisy.

357. Ox-eye, *Leucanthemum vulgare* (Lam.)

Genus Artemisia, Wormwood.

358. Wormseed, *Artemisia Absinthium* (L.)

Genus Gnaphalium, Cudweed.

[(Michx.)

359. Common Everlasting, *Gnaphalium polycephalum*

Genus Antennaria, Everlasting.

[Br.)

360. Pearly Everlasting, *Antennaria margaritacea* (R.

361. Plantain-leaved Everlasting, *A. plantaginifolia*

Genus Senecio, Groundsel.

[(Hook.)

362. Squaw-weed, *Senecio aureus* (L.)

Genus Cirsium, Plumed Thistle.

363. Common Thistle, *Cirsium lanceolatum* (Scop.)

364. Tall Thistle, *C. altissimum* (Spreng.)

Genus Lappa, Burdock.

365. Common Burdock, *Lappa officinalis* (Allioni.)

Genus Cynthia, Cynthia.

366. —————, *Cynthia Virginica* (Don.)

367. —————, *C. Dandelion* (DC.)

Genus Hieracium, Hawkweed.

368. Hairy Hawkweed, *Hieracium Gronovii* (L.)

Genus Pyrrhopappus, False Dandelion.

369. False Dandelion, *Pyrrhopappus Carolinianus* (DC.)

Genus Taraxacum, Dandelion.

[(Desf.)

370. Common Dandelion, *Taraxacum Dens-leonis*

Genus Lactuca, Lettuce.

371. Wild Lettuce, *Lactuca Canadensis* (L.)

Genus Mulgedium, Blue Lettuce.

372. False Lettuce, *Mulgedium leucophæum* (DC.)

Genus Sonchus, Sow-thistle.

373. Common Sow-thistle, *Sonchus oleraceus* (L.)

374. Spiny-leaved Sow-thistle, *S. asper* (Vill.)

ORDER LOBELIACEÆ—LOBELIA FAMILY.

Genus Lobelia, Lobelia.

- 375. Cardinal-flower, *Lobelia cardinalis* (L.)
- 376. Great Lobelia, *L. syphilitica* (L.)
- 377. —————, *L. amœna* (Michx.)
- 378. Indian Tobacco, *L. inflata* (L.)
- 379. —————, *L. spicata* (Lam.)

ORDER CAMPANULACEÆ—CAMPANULA FAMILY.

Genus Campanula Bellflower.

- 380. Tall Bellflower, *Campanula Americana* (L.)

Genus Specularia, Venus's Looking-glass. [DC.]

- 381. Venus's Looking-glass, *Specularia perfoliata* (A.)

ORDER ERICACEÆ—HEATH FAMILY.

Genus Gaylussacia, Huckleberry.

- 382. Box Huckleberry, *Gaylussacia brachycera* (Gray.)

Genus Vaccinium, Blueberry.

- 383. Deerberry, *Vaccinium stamineum* (L.)
- 384. Farkle-berry, *V. arboreum* (Marshall.)

Genus Oxydendrum, Sorrel-tree.

- 385. Sour-wood, *Oxydendrum arboreum* (DC.)

Genus Kalmia, American Laurel.

- 386. Mountain Laurel, *Kalmia latifolia* (L.)

Genus Chimaphila, Pipsissewa.

- 387. Spotted Wintergreen, *Chimaphila maculata* (Pursh)

Genus Monotropa, Pine-sap.

- 388. Indian Pipe, *Monotropa uniflora* (L.)
- 389. Pine sap, *M. Hypopitys* (L.)

ORDER AQUIFOLIACEÆ—HOLLY FAMILY.

Genus Ilex, Holly.

- 390. American Holly, *Ilex opaca* (Ait.)

ORDER EBENACEÆ—EBONY FAMILY.

Genus Diospyros, Date Plum.

- 391. Persimmon, *Diospyros Virginiana* (L.)

ORDER STYRACACEÆ—STORAX FAMILY.

Genus Styrax, Storax.

- 392. —————, *Styrax Americana* (Lam.)

ORDER PLANTAGINACEÆ—PLANTAIN FAMILY.

Genus Plantago, Ribgrass.

- 393. Common Plantain, *Plantago major* (L.)
- 394. —————, *P. sparsiflora* (Michx.)
- 395. English Plantain, *P. lanceolata* (L.)
- 396. —————, *P. pusilla* (Nutt.)

ORDER PRIMULACEÆ—PRIMROSE FAMILY.

Genus Dodecatheon, American Cowslip.

- 397. Shooting-star, *Dodecatheon Meadia* (L.)

Genus Lysimachia, Loosestrife.

- 398. —————, *Lysimachia ciliata* (L.)
- 399. —————, *L. lanceolata* (Walt.)
- 400. Moneywort, *L. nummularia* (L.)

Genus Anagallis, Pimpernel.

- 401. Common Pimpernel, *Anagallis arvensis* (L.)

Genus Samolus, Water Pimpernel.

- 402. —————, *Samolus Valerandi* (L.)
- 403. Brook-weed, VAR. *Americanus* (Gray.)

ORDER BIGNONIACEÆ—BIGNONIA FAMILY.

Genus Bignonia, Bignonia.

- 404. Southern Cross-vine, *Bignonia capreolata* (L.)

Genus Tecoma, Trumpet Flower.

- 405. Trumpet Creeper, *Tecoma radicans* (Juss.)

Genus Catalpa, Indian Bean.

- 406. Catalpa, *Catalpa bignonioides* (Walt.)

Genus Martynia, Unicorn-plant.

- 407. Unicorn-plant, *Martynia proboscidea* (Glox.)

ORDER OROBANCHACEÆ—BROOM-RAPE FAMILY.

Genus Epiphegus, Cancer-root.

- 408. Beech-drops, *Epiphegus Virginiana* (Bart.)

ORDER SCROPHULARIACEÆ—FIGWORT FAMILY.

Genus Verbascum, Mullein.

- 409. Common Mullein, *Verbascum Thapsus* (L.)
- 410. Moth Mullein, V. *Blattaria* (L.)

Genus Scrophularia, Figwort.

411. Figwort, *Scrophularia nodosa* (L.)

Genus Collinsia, Innocence.

412. Blue-eyed Mary, *Collinsia verna* (Nutt.)

Genus Chelone, Turtle-head.

413. Snake-head, *Chelone glabra* (L.)

Genus Pentstemon, Beard-tongue.

414. —————, *Pentstemon pubescens* (Solander.)

415. —————, *P. Digitalis* (Nutt.)

Genus Mimulus, Monkey-flower.

416. —————, *Mimulus ringens* (L.)

Genus Ilysanthes, ———.

417. False Pimpernel, *Ilysanthes gratioloides* (Benth.)

Genus Veronica, Speedwell.

418. Water Speedwell, *Veronica Anagallis* (L.)

419. Thyme-leaved Speedwell, *V. serpyllifolia* (L.)

420. Neckweed, *V. peregrina* (L.)

421. Corn Speedwell, *V. arvensis* (L.)

Genus Seymeria, Seymeria.

422. Mullein Foxglove, *Seymeria macrophylla* (Nutt.)

Genus Gerardia, Gerardia.

423. —————, *Gerardia setacea* (Walt.)

424. Downy False Foxglove, *G. flava* (L.)

425. Smooth False Foxglove, *G. quercifolia* (Pursh.)

426. —————, *C. integrifolia* (Gray.)

ORDER ACANTHACEÆ—ACANTHUS FAMILY.

Genus Dianthera, Water-willow.

427. —————, *Dianthera Americana* (L.)

Genus Ruellia ———.

428. —————, *Ruellia ciliosa* (Pursh.)

429. —————, *R. strepens* (L.)

ORDER VERBENACEÆ—VERVAIN FAMILY.

Genus Verbena, Vervain.

[(Michx.)

430. Narrow-leaved Vervain, *Verbena* *augustifolia*

431. Blue Vervain, *V. hastata* (L.)

432. White Vervain, *V. urticifolia* (L.)
 433. Bracted Vervain, *V. bracteosa* (Michx.)

Genus Lippia, Fog Fruit.

434. Fog Fruit, *Lippia lanceolata* (Michx.)

ORDER LABIATÆ—MINT FAMILY.

Genus Teucrium, Germander.

435. American Germander, *Teucrium Canadense* (L.)

Genus Isanthus, False Pennyroyal.

436. False Pennyroyal, *Isanthus cæruleus* (Michx.)

Genus Mentha, Mint.

437. Spearmint, *Mentha viridis* (L.)
 438. Peppermint, *M. piperita* (L.)
 439. Wild Mint, *M. Canadensis* (L.)

Genus Cunila, Dittany.

440. Common Dittany, *Cunila Mariana* (L.)

Genus Pycnanthemum, Basil.

441. Mountain Mint, *Pycnanthemum montanum* (Michx.)

Genus Melissa, Balm.

442. Common Balm, *Melissa officinalis* (L.)

Genus Hedeoma, Mock Pennyroyal.

443. American Pennyroyal, *Hedeoma pulegioides* (Pers.)

Genus Collinsonia, Horse Balm.

444. Rich-weed, *Collinsonia Canadensis* (L.)

Genus Salvia, Sage.

445. Lyre-leaved Sage, *Salvia lyrata* (L.)

Genus Monarda, Horse Mint.

446. Wild Bergamot, *Monarda fistulosa* (L.)
 447. Horse Mint, *M. punctata* (L.)

Genus Blephilia, Blephilia.

448. —————, *Blephilia ciliata* (Raf.)
 449. —————, *B. hirsuta* (Benth.)

Genus Lophanthus, Giant Hyssop.

450. Giant Hyssop, *Lophanthus nepetoides* (Benth.)

Genus Nepeta, Cat Mint.

- 451. Catnip, *Nepeta Cataria* (L.)
- 452. Ground Ivy, *N. Glechoma* (Benth.)

Genus Synandra, Synandra.

- 453. *Synandra, Synandra grandiflora* (Nutt.)

Genus Physostegia, False Dragon-head.

- 454. —————, *Physostegia Virginiana* (Benth.)

Genus Brunella, Self-heal.

- 455. Common Self-heal, *Brunella vulgaris* (L.)

Genus Scutellaria, Skullcap.

- 456. —————, *Scutellaria versicolor* (Nutt.)
- 457. —————, *S. serrata* (Andrews.)
- 458. —————, *S. nervosa* (Pursh.)
- 459. —————, *S. galericulata* (L.)
- 460. Mad-dog Skullcap, *S. lateriflora* (L.)

Genus Marrubium, Horehound.

- 461. Common Horehound, *Marrubium vulgare* (L.)

Genus Stachys, Hedge-nettle.

- 462. Rough Hedge-nettle, *Stachys palustris* (L.)

Genus Leonurus, Motherwort.

- 463. Common Motherwort, *Leonurus Cardiaca* (L.)

Genus Lamium, Dead-nettle.

- 464. Clasping Dead-nettle, *Lamium amplexicaule* (L.)

ORDER BORRAGINACEÆ—BORAGE FAMILY.

Genus Echium, Viper's Bugloss.

- 465. Blue-weed, *Echium vulgare* (L.)

Genus Symphytum, Comfrey.

- 466. Common Comfrey, *Symphytum officinale* (L.)

Genus Onosmodium, False Gromwell.

- 467. —————, *Onosmodium Carolinianum* (DC.)

Genus Lithospermum, Gromwell.

- 468. Hoary Puccoon, *Lithospermum canescens* (Lehm.)

Genus Mertensia, Smooth Lungwort.

- 469. Lungwort, *Mertensia Virginica* (DC.)

Genus Echinosperrum, Stickseed.

470. ———, *Echinosperrum Lappula* (Lehm.)

Genus Cynoglossum, Hound's Tongue. [(L.)

471. Common Hound's Tongue, *Cynoglossum officinale*
 472. Wild Comfrey, *C. Virginicum* (L.)
 473. Beggar's Lice, *C. Morisoni* (DC.)

ORDER HYDROPHYLLACEÆ—WATERLEAF FAMILY.

Genus Hydrophyllum, Waterleaf.

474. ———, *Hydrophyllum macrophyllum* (Nutt.)
 475. ———, *H. Virginicum* (L.)
 476. ———, *H. Canadense* (L.)
 477. ———, *H. appendiculatum* (Michx.)

Genus Phacelia, ———.

478. ———, *Phacelia bipinnatifida* (Michx.)
 479. ———, *P. Purshii* (Buckley.)

ORDER POLEMONIACEÆ—POLEMONIUM FAMILY.

Genus Polemonium, Greek Valerian.

480. ———, *Polemonium reptans* (L.)

Genus Phlox, Phlox.

481. ———, *Phlox paniculata* (L.)
 482. Carolina Phlox, *P. Carolina* (L.)
 483. ———, *P. glaberrima* (L.)
 484. ———, *P. divaricata* (L.)
 485. Ground Pink, *P. subulata* (L.)

ORDER CONVULVULACEÆ—CONVOLVULUS FAMILY.

Genus Ipomœa, Morning Glory.

486. Common Morning Glory, *Ipomœa purpurea* (Lam.)
 487. Small Morning Glory, *I. Nil* (Roth.)
 488. ———, *I. lacunosa* (L.)
 489. Wild Potato-vine, *I. pandurata* (Meyer.)

Genus Calystegia, Bracted Bindweed.

490. Bracted Bindweed, *Calystegia spithamœa* (Pursh.)

Genus Custuta, Dodder.

491. ———, *Custuta arvensis* (Beyrich.)
 492. ———, *C. glomerata* (Choisy.)

ORDER SOLANACEÆ—NIGHTSHADE FAMILY.

Genus Solanum, Nightshade.

493. Bittersweet, *Solanum Dulcamara* (L.)
 494. Common Nightshade, *S. nigrum* (L.)
 495. Bull Thistle, *S. Carolinense* (L.)

Genus Physalis, Ground Cherry.

496. —————, *Physalis angulata* (L.)
 497. —————, *P. pubescens* (L.)
 498. —————, *P. viscosa* (L.)

Genus Nicandra, Apple of Peru.

499. —————, *Nicandra physaloides* (Gærtn.)

Genus Datura, Thorn Apple.

500. White Jamestown Weed, *Datura Stramonium* (L.)
 501. Purple Jamestown Weed, *D. Tatula* (L.)

ORDER GENTIANACEÆ—GENTIAN FAMILY.

Genus Sabbatia, American Centaury.

502. Rose Pink, *Sabbatia angularis* (Pursh.)

Genus Fraxera, American Columbo.

503. Columbo, *Fraxera Carolinensis* (Walt.)

ORDER LOGANIACEÆ—LOGANIA FAMILY.

Genus Polypremum, Polypremum.

504. —————, *Polypremum procumbens* (L.)

ORDER APOCYNACEÆ—DOGBANE FAMILY.

Genus Apocynum, Dogbane.

[(L.)

505. Spreading Dogbane, *Apocynum androsæmifolium*
 506. Indian Hemp, *A. cannabinum* (L.)

ORDER ASCLEPIADACEÆ—MILKWEED FAMILY.

Genus Asclepias, Silkweed.

507. Silkweed, *Asclepias Cornuti* (Decainse.)
 508. Poke Milkweed, *A. phytolaccoides* (Pursh.)
 509. Purple Milkweed, *A. purpurascens* (L.)
 510. Variegated Milkweed, *A. variegata* (L.)
 511. Four leaved Milkweed, *A. quadrifolia* (Jacq.)
 512. Obtuse-leaved Milkweed, *A. obtusifolia* (Michx.)
 513. Whorled Milkweed, *A. verticillata* (L.)
 514. Pleurisy-root, *A. tuberosa* (L.)
 515. Swamp Milkweed, *A. incarnata* (L.)

*Genus Acerates, Green Milkweed.*516. —————, *Acerates viridiflora* (Ell.)517. —————, *A. paniculata* (Decaisne.)*Genus Enslenia, Enslenia.*518. —————, *Enslenia albida* (Nutt.)*Genus Gonolobus, Gonolobus.*519. —————, *Gonolobus obliquus* (R. Br.)

ORDER OLEACEÆ—OLIVE FAMILY.

*Genus Fraxinus, Ash.*520. White Ash, *Fraxinus Americana* (L.)521. Green Ash, *F. viridis* (Michx.)522. Black Ash, *F. sambucifolia* (Lam.)523. Blue Ash, *F. quadrangulata* (Michx.)

ORDER ARISTOLOCHIACEÆ—BIRTHWORT FAMILY.

*Genus Asarum, Wild Ginger.*524. Wild Ginger, *Asarum Canadense* (L.)

ORDER PHYTOLACCACEÆ—POKEWEED FAMILY.

*Genus Phytolacca, Pokeweed.*525. Pokeweed, *Phytolacca decandra* (L.)

ORDER CHENOPODIACEÆ—GOOSEFOOT FAMILY.

*Genus Chenopodium, Goosefoot.*526. Pigweed, *Chenopodium album* (L.)527. Wormseed, *C. Anthelminticum* (L.)

ORDER AMARANTACEÆ—AMARANTH FAMILY.

*Genus Amaranthus, Amaranth.*528. Careless Weed, *Amaranthus retroflexus* (L.)529. —————, *A. albus* (L.)530. Thorny Amaranth, *A. spinosus* (L.)

ORDER POLYGONACEÆ—BUCKWHEAT FAMILY.

*Genus Polygonum, Knotweed.*531. Prince's Feather, *Polygonum orientale* (L.)532. Smartweed, *P. Hydropiper* (L.)533. Water Smartweed, *P. acre* (H. B. K.)534. Mild Water Pepper, *P. hydropiperoides* (Michx.)535. Virginia Water Pepper, *P. Virginianum* (L.)

536. Door-weed, *P. aviculare* (L.)
 537. —————, VAR. *erectum* (L.)
 538. Black Bindweed, *P. convolvulus* (Roth.)
 539. —————, *P. dumetorum* (L.)
 540. Climbing False Buckwheat, VAR. *scandens* (L.)

Genus Rumex, Dock.

541. Pale Dock, *Rumex Brittanica* (L.)
 542. Curled Dock, *R. crispus* (L.)
 543. Smaller Green Dock, *R. conglomeratus* (Murray.)
 544. Bloody-veined Dock, *R. sanguineus* (L.)
 545. Field Sorrel, *R. Acetosella* (L.)

ORDER LAURACEÆ—LAUREL FAMILY.

Genus Sassafras, Sassafras.

546. Sassafras, *Sassafras officinale* (Nees.)

Genus Lindera, Wild Allspice.

547. Spicewood, *Lindera Benzoin* (Meisner.)
 548. Spicewood, *L. melissæfolia* (Blume.)

ORDER THYMELEACEÆ—MEZEREUM FAMILY.

Genus Dirca, ———.

549. Leatherwood, *Dirca palustris* (L.)

ORDER LORANTHACEÆ—MISTLETOE FAMILY.

Genus Phoradendron, False Mistletoe.

[(Nutt.)

550. American Mistletoe, *Phoradendron flavescens*

ORDER EUPHORBIACEÆ—SPURGE FAMILY.

Genus Euphorbia, Spurge.

551. —————, *Euphorbia maculata* (L.)
 552. —————, *E. hypericifolia* (L.)
 553. —————, *E. dictyosperma* (F. & M.)
 554. —————, *E. corollata* (L.)
 555. —————, *E. commutata* (Engelm.)

Genus Acalypha, Three-seeded Mercury.

556. —————, *Acalypha Caroliniana* (L.)
 557. —————, *A. Virginica* (Walt.)
 558. —————, VAR. *gracilens*.

Genus Tragia, Tragia.

559. —————, *Tragia macrocarpa* (Willd.)

Genus Carya, Hickory.

- 579. Pecan-nut, *Carya olivæformis* (Nutt.)
- 580. Shell-bark Hickory, *C. alba* (Nutt.)
- 581. Small-fruited Hickory, *C. microcarpa* (Nutt.)
- 582. Large-fruited Shell-bark Hickory, *C. sulcata* (Nutt.)
- 583. Mockernut, *C. tomentosa* (Nutt.)
- 584. Pig-nut Hickory, *C. porcina* (Nutt.)
- 585. Swamp Hickory, *C. amara* (Nutt.)

ORDER CUPULIFERÆ—OAK FAMILY.

Genus Quercus, Oak.

- 586. White Oak, *Quercus alba* (L.)
- 587. Post-oak, *Q. obtusiloba* (Michx.)
- 588. Bur-oak, *Q. macrocarpa* (Michx.)
- 589. Swamp White Oak, *Q. bicolor* (Willd.)
- 590. White Chestnut-oak, *Q. prinus* (L.)
- 591. Mountain Chestnut-oak, *Q. montana* (Willd.)
- 592. Yellow Chestnut-oak, *Q. Muhlenbergi* (Michx.)
- 593. Laurel Oak, *Q. imbricaria* (Michx.)
- 594. Black-Jack Oak, *Q. nigra* (L.)
- 595. Spanish Oak, *Q. falcata* (Michx.)
- 596. Scarlet Oak, *Q. coccinea* (Wang.)
- 597. Black Oak, *Q. tinctoria* (Bartram.)
- 598. Red Oak, *Q. rubra* (L.)

Genus Castanea, Chestnut.

- 599. American Chestnut, *Castanea vesca* (L.)

Genus Fagus, Beech.

- 600. Red Beech, *Fagus ferruginea* (Ait.)
- 601. White Beech, *F. sylvatica* (L.)

Genus Corylus, Hazel-nut.

- 602. Wild Hazel-nut, *Corylus Americana* (Walt.)

Genus Ostrya, Hop Hornbeam.

- 603. Iron-wood, *Ostrya Virginica* (Willd.)

Genus Carpinus, Hornbeam.

- 604. Hornbeam, *Carpinus Americana* (Michx.)

ORDER BETULACEÆ—BIRCH FAMILY.

Genus Alnus, Alder.

605. Smooth Alder,
- Alnus serrulata*
- (Ait.)

ORDER SALICACEÆ—WILLOW FAMILY.

Genus Salix, Willow.

606. —————,
- Salix tristis*
- (Ait.)

607. Black Willow,
- S. nigra*
- (Marsh.)

608. White Willow,
- S. alba*
- (L.)

Genus Populus, Poplar.

609. American Aspen,
- Populus tremuloides*
- (Michx.)

610. Necklace Poplar,
- P. monilifera*
- (Ait.)

- ,
- P. balsamifera*
- (L.)

611. Balm of Gilead, VAR.
- candicans*
- (Ait.)

612. Silver-leaf Poplar,
- P. alba*
- (L.)

ORDER CONIFERÆ—PINE FAMILY.

Genus Pinus, Pine.

613. Scrub Pine,
- Pinus inops*
- (Ait.)

614. Yellow Pine,
- P. mitis*
- (Michx.)

Genus Juniperus, Juniper.

615. Red Cedar,
- Juniperus Virginiana*
- (L.)

ORDER ARACEÆ—ARUM FAMILY.

Genus Arisæma, Indian Turnip.

616. Indian Turnip,
- Arisæma triphyllum*
- (Torr.)

617. Dragon-root,
- A. Dracontium*
- (Schott.)

Genus Acorus, Sweet Flag.

618. Calamus,
- Acorus Calamus*
- (L.)

ORDER LEMNACEÆ—DUCKWEED FAMILY.

Genus Lemna, Duckweed.

619. Duck's-meat,
- Lemna polyrrhiza*
- (L.)

ORDER TYPACEÆ—CAT-TAIL FAMILY.

Genus Typha, ———.

620. Cat-tail Flag,
- Typha latifolia*
- (L.)

ORDER ORCHIDACEÆ—ORCHIS FAMILY.

Genus Spiranthes, Ladies' Tresses.

621. —————,
- Spiranthes gracilis*
- (Bigelow.)

Genus Bletia, Bletia.

622. ———,
- Bletia aphylla*
- (Nutt.)

Genus Liparis, ———.

623. Twayblade,
- Liparis liliifolia*
- (Rich.)

Genus Corallorhiza, ———.

624. Coral-root,
- Corallorhiza odontorhiza*
- (Nutt.)

Genus Cypripedium, Moccasin-flower. [cens (Willd.)]

625. Large Yellow Lady's Slipper,
- Cypripedium pubes-*

ORDER AMARYLLIDACEÆ—AMARYLLIS FAMILY.

Genus Agave, American Aloe.

626. False Aloe,
- Agave Virginica*
- (L.)

Genus Hypoxys, Star-grass.

627. ———,
- Hypoxys erecta*
- (L.)

ORDER HÆMODORACEÆ—BLOODWORT FAMILY.

Genus Aletris, Star-grass.

628. Colic-root,
- Aletris farinosa*
- (L.)

ORDER IRIDACEÆ—IRIS FAMILY.

Genus Iris, Flower-de-Luce.

629. Large Blue Flag,
- Iris versicolor*
- (L.)

630. Crested Dwarf Iris,
- I. cristata*
- (Ait.)

Genus Pardanthus, Blackberry Lily.

631. ———,
- Pardanthus Chinensis*
- (Ker.)

Genus Sisyrinchium, ———.

632. Blue-eyed Grass,
- Sisyrinchium Bermudiana*
- (L.)

ORDER DIOSCOREACEÆ—YAM FAMILY.

Genus Dioscorea, Yam.

633. Wild Yam-root,
- Dioscorea villosa*
- (L.)

ORDER SMILACEÆ—SMILAX FAMILY.

Genus Smilax, Catbrier.

634. Greenbrier,
- Smilax rotundifolia*
- (L.)

635. ———,
- S. glauca*
- (Walt.)

636. ———,
- S. tamnoides*
- (L.)

637. Carrion Flower,
- S. herbacea*
- (L.)

ORDER LILIACEÆ—LILY FAMILY.

Genus Trillium, Three-leaved Nightshade.

638. ———,
- Trillium sessile*
- (L.)

639. —————, *T. recurvatum* (Beck.)
 640. Wake Robin, *T. grandiflorum* (Salisb.)
 641. Purple Trillium, *T. erectum* (L.)
 642. —————, VAR. *declinatum*.

Genus Uvularia, Bellwort.

643. —————, *Uvularia perfoliata* (L.)
 644. —————, *U. sessilifolia* (L.)

Genus Convallaria, ———.

645. Lilly of the Valley, *Convallaria majalis* (L.)

Genus Smilacina, False Solomon's Seal.

646. False Spikenard, *Smilacina racemosa* (Desf.)

Genus Polygonatum, Solomon's Seal.

[(Ell.)

647. Smaller Solomon's Seal, *Polygonatum biflorum*
 648. Great Solomon's Seal, *P. giganteum* (Dietrich.)

Genus Erythronium, Dog's-tooth Violet.

[canum (Smith.)

649. Yellow Dog's-tooth Violet, *Erythronium Americanum*
 650. White Dog's tooth Violet, *E. albidum* (Nutt.)

Genus Scilla, Squill.

651. Wild Hyacinth, *Scilla Fraseri* (L.)

Genus Allium, Onion.

652. Wild Onion, *Allium cernuum* (Roth.)
 653. —————, *A. striatum* (Jacq.)

ORDER COMMELYNACEÆ—SPIDERWORT FAMILY.

Genus Commelyna, ———.

654. Day Flower, *Commelyna Cayennensis* (Rich.)

ORDER FILICES—FERNS.

Genus Polypodium, Polypody.

655. Scaly Polypody, *Polypodium incanum* (Swartz.)

Genus Adiantum, Maidenhair.

656. Maidenhair, *Adiantum pedatum* (L.)

Genus Pteris, Bracken.

657. Common Brake, *Pteris aquilina* (L.)

Genus Cheilanthes, Lip Fern.

658. Clothed Lip Fern, *Cheilanthes vestita* (Swartz.)

Genus Pellaea, Cliff Brake.

659. Cliff Brake, *Pellaea atropurpurea* (Link.)

Genus Asplenium, Spleenwort. [(Nutt.)

660. Pinnatifid Spleenwort, *Asplenium pinnatifidum*
 661. —————, *A. ebenoides* (R. R. Scott.)
 662. Maidenhair Spleenwort, *A. Trichomanes* (L.)
 663. Ebony Spleenwort, *A. ebeneum* (Ait.)
 664. Small Ebony Spleenwort, *A. parvulum* (Eaton.)
 665. Wall-rue Spleenwort, *A. Ruta-muraria* (L.)
 666. Narrow-leaved Spleenwort, *A. angustifolium* (Michx.)
 667. Marsh Spleenwort, *A. thelypteroides* (Michx.)
 668. Lady Fern, *A. Filix-fœmina* (Bernh.)

Genus Camptosorus, Walking-leaf.

669. Walking-leaf, *Camptosorus rhizophyllus* (Link.)

Genus Phegopteris, Beech Fern.

670. Beech Fern, *Phegopteris polypodioides* (Fee.)
 671. Beech Fern, *P. hexagonoptera* (Fee.)

Genus Aspidium, Shield Fern. [(Swartz.)

672. New York Shield Fern, *Aspidium Noveboracense*
 673. Marginal Shield Fern, *A. marginale* (Swartz.)
 674. Winter Fern, *A. acrostichoides* (Swartz.)

Genus Cystopteris, Bladder Fern. [(Bernh.)

675. Bulbous Bladder Fern, *Cystopteris bulbifera*
 676. Common Bladder Fern, *C. fragilis* (Bernh.)

Genus Onoclea, Sensitive Fern.

677. Sensitive Fern, *Onoclea sensibilis* (L.)

Genus Woodsia, Woodsia.

678. Obtuse leaved Woodsia, *Woodsia obtusa* (Torr.)

Genus Osmunda, Flowering Fern.

679. Royal Fern, *Osmunda regalis* (L.)
 680. Cinnamon Fern, *O. cinnamomea* (L.)

Genus Botrychium Moonwort. [(Swartz.)

681. Virginia Moonwort, *Botrychium Virginicum*
 Ternate Moonwort, *B. ternatum*.
 682. —————, VAR. *obliquum* (Milde.)

Genus Croton, Croton.

560. Billy-goat Tea, *Croton capitatus* (Michx.)
 561. —————, *C. monanthogynus* (Michx.)

ORDER URTICACEÆ—NETTLE FAMILY.

Genus Ulmus, Elm.

562. Slippery Elm, *Ulmus fulva* (Michx.)
 563. White Elm, *U. Americana* (L.)
 564. Corky Elm, *U. racemosa* (Thomas.)
 565. Winged Elm, *U. alata* (Michx.)

Genus Planera, ———.

566. Planer Tree, *Planera aquatica* (Gmel.)

Genus Celtis, Nettle Tree.

567. Hackberry, *Celtis occidentalis* (L.)
 568. Small Hackberry, *C. Mississippensis* (Bosc.)

Genus Morus, Mulberry.

569. Red Mulberry, *Morus rubra* (L.)

Genus Urtica, Nettle.

570. —————, *Urtica dioica* (L.)
 571. —————, *U. chamædryoides* (Pursh.)

Genus Laportea, Wood-nettle.

[ichaud.)

572. Stinging Nettle, *Laportea Canadensis* (Gaud-

Genus Pilea, Richweed.

573. Clearweed, *Pilea pumila* (Gray.)

Genus Cannabis, Hemp.

574. Hemp, *Cannabis sativa* (L.)

Genus Humulus, Hop.

575. Wild Hop, *Humulus Lupulus* (L.)

ORDER PLATANACEÆ—PLANE-TREE FAMILY.

Genus Platanus, Buttonwood.

576. Sycamore, *Platanus occidentalis* (L.)

ORDER JUGLANDACEÆ—WALNUT FAMILY.

Genus Juglans, Walnut.

577. Butternut, *Juglans cinerea* (L.)
 578. Black Walnut, *J. nigra* (L.)

